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NEW CALIFORNIAN FUNGI.

By J. B. Ellis and B. M. Everhart.

Dimerosporium echinatum, E. & E.

On living leaves of *Quercus chrysolepis*, Jackson, Amador Co., Calif., Coll. Geo. Hansen, com. Marshall A. Howe.

Epiphyllous, forming dense orbicular patches 3 to 4 mm. diam., made up of the densely crowded, bristly, black, ovate perithecia, 200 to 300 μ diam., arising from a scanty, sparingly branched, septate, creeping mycelium, and thickly clothed with opaque, black bristles 70 to 110 μ long, 5 to 7 μ thick at the base. Asci clavate-cylindrical, short-stipitate, paraphysate, 8-spored, p. sp. 50 to 55 x 15 μ. Sporidia mostly biseriate, ovate, uniseptate and slightly constricted, yellow, 12 to 15 x 6 to 7 μ.

The perithecia are soon broadly perforated above, and the orbicular patches which they form often cover the entire surface of the leaf.

Metasphaeria Ilicis, E. & E.

On dead and living leaves of *Ilex Aquifolium*, Berkeley, Calif., March, 1893, W. C. Blasdale No. 86.

Epiphyllous. On the living leaves the perithecia are thickly scattered on large (1 cm.), white (reddish-brown below) orbicular spots with a narrow reddish-brown border, but on the dead leaves they are spread evenly over the whole surface of the leaf, not in spots. Perithecia globose, about ⅓ diam., the apex strongly erumpent and covered by the mostly stellately cleft epidermis, above which the papilliform ostiolum scarcely projects. Asci oblong, abruptly contracted at base into a short nodular stipe, mostly narrower above. Paraphyses stout, septate below, attenuate above, but slightly enlarged at the tip. Sporidia biseriate, clavate-oblong, about 4-septate, strongly constricted at the second septum, but not at the others, hyaline, straight, obtuse, narrower below, 15 to 27 x 6 to 7 μ (mostly not over 20 μ long).

Eutypella aesculina, E. & E.

Perithecia subcircinate, 3 to 8 together globose, ½ mm. diam., with thick, coriaceous walls, black and shining within, buried in the inner bark which is more or less blackened, but without any distinct circumscribing line, their bases slightly penetrating the wood which is not discolored. Ostiola short-cylindrical or clavate-cylindrical, faintly sulcate or often smooth, united in a dirty black disk erumpent throng the epidermis which is scarcely raised. Asci (p. sp.) clavate, 20 x 4 μ, 8-spored, with a slender base, and indistinctly paraphysate. Sporidia biseriate above, allantoid, hyaline (slightly yellowish in the mass), 3½ to 4½ x 1¼ μ, moderately curved. On dead limbs of *Æsculus Californica*, California, W. C. Blasdale.

Pseudovalsa subrufa, E. & E.

On dead limbs of *Rhus* sp., Berkeley, Calif., Feb. 1893, W. C. Blasdale No. 62.

Stromata plano-convex, 1½ to 2 mm. diam., the base lightly penetrating the inner bark, evenly scattered. Perithecia 6 to 10 in a stroma, closely packed, dark brown, thick walled, about ½ mm. diam., the inner cavity 300 to 400 μ diam., covered above by the reddish substance of the stroma, contracted into slender, converging necks terminating in the large (½ mm.), subglobose, irregularly perforated, reddish-brown ostiola united in a compact cluster erumpent through the closely embracing epidermis. Asci clavate-cylindrical, 75 to 85 x 7 μ, paraphysate, 8-spored, subsessile. Sporidia uniseriate, oblong, 3-septate, scarcely or only slightly constricted, brown, 12 to 15 x 4 to 5 μ.

The reddish tint of the ostiola and of the inner substance of the stroma is very distinct at first but finally becomes more obscure.

Phyllosticta agrifolia, E. & E.

On leaves of *Quercus agrifolia*, Berkeley, Calif., W. C. Blasdale No. 107.

Spots terminal or marginal, rusty brown, with a narrow, reddish border, sometimes none, the entire leaf being dead and dry. Prithecia amphigenous, subglobose, perforated above, 150 to 200 μ diam., semierumpent but loosely covered by the upraised edges of the ruptured and whitened epidermis. Sporules oblong, hyaline, continuous, 6 to 8 x 2½ to 3 μ.

Closely allied to *Ph. Quercus*, Saccardo, but in that species (sec. specc. in Rab. F. Eur. 2896) the spots are obicular and paler, with a narrow raised margin, and the perithecia slighly prominent are closely covered by the epidermis which is not ruptured. The sporules are about the same in both. The Calif. specimens are accompanied by *Pestalozzia Monochaeta*, Desm. on the same leaves.

Cercospora Hanseni, E. & E.

On leaves of *Asclepias ecornuta,* Kell., at Jackson, Amador Co., Calif., Coll. Geo. Hansen, com. Marshall A. Howe.

Amphigenous tufts thickly scattered over dark, dull brown spots 3 to 4 mm. diam., and also more extensively over adjacent green parts of the leaf. Hyphæ short (10 to 15 x 5 to 6 μ), simple, olivaceous, obtuse, continuous, often thickened at the apex, arising from a small globose stromatic base. Conidia cylindrical, olivaceous, 1-to 4-septate, 30 to 50 x 4 to 5 μ, ends obtuse.

NOVITATES OCCIDENTALES.—IV.

By Edw. L. Greene.

Streptanthus suffrutescens. Allied to *S. tortuosus* but perennial and suffrutescent, the stout caudex-like very leafy trunk 6 or 8 inches high, this parting into several flowering branches 1 or 2 feet long; whole herbage glabrous, light-green, very glaucous: cauline leaves 2 inches long, cuneate-obovate tapering to a somewhat winged petiole, the leaf-margin coarsely and not deeply serrate-toothed, the apex

NEW WEST AMERICAN FUNGI.

By J. B. Ellis and B. M. Everhart.

Nectria cytisporina, E. & E.

On dead fir twigs. Seattle, March, 1892, Miss Adella M. Parker.

Stroma cytisporoid, subcuticular, convex, unicellular, olive-gray with a white center, raising the epidermis in distinct pustules, and filled with ovate, dark brown, 2-nucleate stylospores 8 to 10 x 4 to 5 μ. Perithecia 3 to 8, originating in the white central part of the stroma, but soon cespitose erumpent and superficial, ovate, bright red, about $\frac{1}{4}$ mm. diameter, perforated above. Asci cylindrical, short-stipitate, p. sp. about 60 x 6 μ, without paraphyses, 8-spored. Sporidia uniseriate, hyaline, unseptate, not constricted, narrow-elliptical, 7 to 8 x 8 to 4 μ.

Resembles *N. cucurbitula* (Tode), but distinguished by its accompanying stylospores and its smaller asci and sporidia.

Lasiosphæria dichroospora, E. & E.

On clay loam in woods, Seattle, Wash., April, 1892, Chas. V. Piper, No. 170, about 1 mm. diam.

Perithecia densely gregarious, ovate, rugose, black, tough-membranaceous, clothed with a few slender brown hairs. Ostiolum broad convex-papilliform, sometimes sub-compressed. Asci lanceolate, 150 x 8 to 10 μ, p. sp. 100 to 120 μ long, paraphysate, 8-spored. Sporidia biseriate, cylindrical, bent near the lower end, and hyaline below, for about $\frac{1}{3}$ the length of the sporidium, abruptly black above, each end mucronately pointed, about 40 x 4 μ.

A well marked and curious species. The base of the perithecia is sunk in the soil, with the upper half or more free.

Rosellinia pulcherrima, E. & E.

On a piece of fir bark partly covered with earth, Seattle, Wash., Sept., 18, 1892, Adella M. Parker, No. 160.

Perithecia gregarious, hemispherical, 1 to 1¼ mm. diameter, black and shining, coriaceo-carbonaceous, ribbed below, and connected by a thin, mouse-colored, loosely interwoven subiculum. Ostiolum broad-conical, seated in a shallow depression. Asci cylindrical, 110 to 120 x 7 to 8 μ, pseudo-paraphysate, stipitate, 8-spored. Sporidia uniseriate, oblong-fusoid, 2-nucleate, nearly hyaline at first, becoming brown and more or less opake, 14 to 16 x 3½ to 4½ μ, with a straight, awl-shaped, hyaline appendage at each end, 8 to 10 μ long.

The ribs around the base extend about half way up and are generally quite distinct.

Anthostomella cornicola, E. & E.

On dead twigs of *Cornus*, Seattle, Wash., August, 1892, Adella M. Parker, No. 115.

Scattered, buried. Perithecia globose, ¾ mm. diameter, partly sunk in the wood and raising the epidermis into convex pustules covered by the black and shining epidermis, which is perforated in the center by the papilliform ostiolum. Asci cylindrical, paraphysate, 8-spored, p. sp. 150 x 8 μ. Sporidia uniseriate, narrow-elliptical, 20 to 22 x 7 to 8 μ, at first with a hyaline coat and a short, hyaline, mucronate tip above, at length opake.

Sphærella sidæcola, E. & E.

On living leaves of *Sidalcea delphinifolia*, Pasadena, Calif., March, 1893.

Perithecia amphigenous, minute, subcircinate, on small (1 mm.) dead brownish spots. Asci oblong or obclavate, 35 to 40 x 8 μ, fasciculate, mostly curved. Sporidia biseriate, pyriform, greenish-hyaline, 10 to 12 x 4 μ.

Physalospora agrifolia, E. & E.

On leaves of *Quercus agrifolia*, Berkeley, Calif., March, 1893, Blasdale, No. 107.

Perithecia epiphyllous, on large wood-colored spots 1 to 2 cm. diameter, or often occupying half or more of the leaf, and bounded by a narrow, reddish line, sunk in the substance of the leaf, but raising the epidermis into pustules and finally

rupturing it. Contents of the young perithecia pale orange-yellow at first, becoming black, 150 to 200 μ diam. Asci clavate-cylindrical, 45 to 60 x 8 to 10 μ, short-stipitate, 8-spored, without paraphyses. Sporidia biseriate, ovate, hyaline, continuous, 10 to 15 x 5 to 6 μ, subacute below.

Quite different from *P. bina*, Hark., on the same host.

The *Physalospora* is accompanied by a *Phyllosticta* (*P. agrifolia*, E. & E.), with sporules oblong-elliptical, 5 to 6 x 2 μ, and a *Pestalozzia* agreeing with the diagnosis of *P. Saccardoi*, Speg.

Melogramma Columbiensis, E. & E.

On small dead limbs of some tree or shrub, British Columbia, May, 1893, Dr. J. Macoun.

Stromata thickly scattered, small, about 1 mm. diam., subangular or hysteriiform, black, soon raising and rupturing the epidermis by which they are closely embraced and partly covered, mostly flattened above. Perithecia buried in the stroma, small, 150 to 200 μ diam., white inside. Ostiola minute, papilliform. Asci clavate-cylindrical, paraphysate, 8-spored, about 100 x 12 μ. Sporidia biseriate, oblong or clavate-oblong, hyaline, 5-septate, constricted at the middle septum, 18 to 20 x 6 to 7 μ, sometimes one of the inner cells is divided by a faint, longitudinal septum. Has the habit of *Botryosphaeria fuliginosa*, (M. & N.).

Montagnella abietina, E. & E.

On dead fir twigs, Seattle, Wash., March, 1892, Miss Adella M. Parker.

Erumpent superficial, cespitose. Perithecia ovate-globose, hard (almost sclerotoid), black and shining, about $\frac{1}{3}$ mm. diam., connected at base by an obscure stroma. Ostiolum papilliform. Asci clavate-cylindrical, short stipitate, paraphysate, 8-spored, 75 to 80 x 10 μ. Sporidia biseriate, oblong-fusoid, yellowish-hyaline, 3-septate and slightly constricted, 15 to 20 x 5 to 6 μ.

Peziza (Dasyscypha) **Gaultheriæ,** E. & E.

On living leaves of *Gaultheria Shallon*, Seattle, Wash., Sept., 1892, Adella M. Parker, No. 160.

Maculicolous, hypophyllous, ascomata stipitate, nearly closed at first, then open and cup-shaped, ¾ to 1 mm. diam., pale orange, hymenium, more deeply colored, clothed outside with a dense coat of short, white hairs. Stipe cylindrical, rather less in length than the diameter of the cup. Asci clavate-cylindrical, slender, 40 x 3 to 4 μ, short-stipitate, aparaphysate. Sporidia biseriate, oblong or clavate-oblong, hyaline, continuous, 4 to 5 x 1¼ μ.

The fungus is seated on large, round spots, 2 to 3 cm. diam., grayish white above, rusty brown below, with a dark purple border shading into red.

Psilopezia trachyspora, E. & E.

On rotten wood, North Bend, King Co., Wash., Aug., 1872, Adella M. Parker, No. 92.

Applanate, ½ to 1½ cm. diam., glaucous brown, margin narrowly incurved, wrinkled outside, reddish brown below, substance white inside. Asci cylindrical, stipitate, 200 x 18 to 20 *u*, p. sp. 110 to 130 μ long. Paraphyses cylindrical, stout, yellow-brown, 4 to 5 μ thick, subequal throughout. Sporidia uniseriate, elliptical, hyaline becoming slightly brownish, 18 to 20 x 12 to 14 μ, epispore coarsely and densely warted.

Distinguished from *Ps. nummularia,* Berk. (which it most resembles), by its smaller size, glaucous color and rough sporidia.

Camarosporium Eriogoni, E. & E.

On dead stems of *Eriogonum* sp. Fort Collins, Colorado, June 13, 1893, C. F. Baker, No. 94.

Perithecia scattered, erumpent, black, globose-hemispherical, about 100 μ diam. Ostiolum subpapilliform, perforated. Sporules subglobose or elliptical or subcubical, light brown, 1-septate, and often with one or both cells divided by a septum at right angles to the first (sarcinuliform).

Septoria Araliae, E. & E.

On leaves of *Aralia Californica,* Mill Valley, July 24, 1893, W. C. Blasdale, No. 163.

Spots amphigenous, dirty yellow, whitening out, suborbicular, 2 to 3 mm. diam., with a narrow rather darker raised border on both sides of the leaf. Perithecia epiphyllous, minute (70 to 75 μ), collected in the center of the spot, semierumpent. Sporules cylindrical, mostly straight, faintly nucleate, 20 to 28 x $1\frac{1}{4}$ to $1\frac{1}{2}$ μ.

The spots are concave on both sides of the leaf and generally dark brown at first.

Rhabdospora Artemisiae, E. & E.

On dead stems of *Artemisia dracunculoides*, Fort Collins, Colo., July, 1893, C. F. Baker, No. 132.

Perithecia minute, black, prominent, gregarious on slightly blackened spots surrounding the stems or interruptedly confluent along them. Sporules vermiform-cylindrical, hyaline, faintly 1 to 3-septate, undulate, 40 to 50 x 3 μ (at the thicker end).

Differs from *R. pleosporoides*, Sacc. in its smaller perithecia and thicker sporules.

Gloeosporium phyllachoroides, E. & E.

On leaves of *Artemisia vulgaris* var. *Californica*, Pasadena, Calif., July, 1893, Prof. A. J. McClatchie, No. 371.

Acervuli epiphyllous, in compact groups of 4 to 12 together, covered by the blackened epidermis which is raised into pustules about 1 mm. diam., resembling the stromata of some Phyllachora. Conidia oblong, curved, obtuse, granular, hyaline, continuous, 14 to 20 x $3\frac{1}{2}$ to 5 μ. Var. **maculicolum** has the acervuli on definite round, dirty brown spots about 2 mm. diam., but does not differ otherwise.

Marsonia ribicola, E. & E.

On leaves of *Ribes aureum*, Fort Collins, Colo., Sept. 1892, C. F. Baker, No. 139.

Spots amphigenous, at first greenish-cinereous, becoming light brown with a darker center and margin, 3 to 5 mm. diam. Acervuli collected around the center of the spots, epiphyllous, pale yellowish, becoming dark, 110 to 150 μ

diam., erumpent. Conidia elliptical, yellowish, uniseptate and slightly constricted, 10 to 14 x 5 to 6 μ, one cell often smaller, ends rounded and obtuse, not curved.

This is quite distinct from *Gloeosporium Ribis* (Lib.)

Cylindrosporium Ceanothi, E. & E.

On leaves of *Ceanothus divaricatus*, Pasadena, Calif., July, 1893.

Acervuli large ($\frac{1}{4}$ to $\frac{1}{2}$ mm. diam.), on small, subangular dark spots on faded, yellow parts of the leaf, prominent below, dark. Conidia elongated, 40 to 55 x $3\frac{1}{2}$ to 4 μ, multinucleate, becoming 3 to 4 or more septate, nearly straight.

Cylindrosporium lactucicolum, E. & E.

On leaves of *Lactuca Ludoviciana*, Fort Collins, Colo., June, 1893, C. F. Baker, No. 110.

Spots amphigenous, indefinite, 2 to 3 mm. diam., light dirty brown above, cinereous below. Acervuli minute (about 60 μ), buried, pale, finally blackened above and appearing like punctiform, suberumpent perithecia. Sporules cylindrical, subundulate, hyaline, nucleate, 20 to 30 x $2\frac{1}{2}$ μ.

On the same leaves are black, subangular spots, limited mostly by the veinlets, 2 to 4 mm. diam., the substance of the leaf in these spots being filled with millions of minute sporules (conidia)? from a size too small to be measured, up to 2 to $2\frac{1}{2}$ μ, subovate, or suballantoid (*Gloeosporium? myriosporum*, E. & E.)

Stilbum albocitrinum, E. & E.

On dead twigs, Seattle, Wash., Oct., 1892, Adella M. Parker, No. 105.

Gregarious, about 1 mm. height. Stem white, glabrous or slightly pruinose, subattenuated above. Head subglobose, $\frac{1}{3}$ to $\frac{1}{2}$ mm. diam., pale orange. Conidia narrow-elliptical, hyaline, 3 x $1\frac{1}{4}$ μ.

Differs from the other smooth-stemmed species in its smaller conidia.

Scolecotrichum Typhæ, E. & E.

On dead leaves of *Typha latifolia*, Fort Collins, Colo., June, 1893, C. F. Baker, No. 149.

Hyphæ erect, simple, brown, continuous, or occasionally with a single septum, straight or subundulate, mostly toothed or lobed at the apex, 30 to 40 x 5 to 6 μ. Conidia elliptical, uniseptate (exceptionally biseptate), olivaceous-brown, 14 to 22 x 8 to 10 μ.

The crowded hyphæform short ($\frac{1}{2}$ to $1\frac{1}{2}$ x $\frac{1}{2}$ to $\frac{3}{4}$ mm.), black, subquadrangular, subseriate patches on both sides of the leaf.

Differs from *S. maculicola*, E. & K., in the absence of any spots and the rather smaller conidia.

Scolecotrichum Asclepiadis, E. & E.

On leaves of *Asclepias eriocarpa*, Pasadena, Cala., July, 1893, Prof. A. J. McClatchie.

Epiphyllous; forming dark colored patches 2 to 4 mm. diam., scattered over the leaf and finally subconfluent. Hyphæ in small but dense tufts, simple, straight, continuous, brownish, about 20 x $3\frac{1}{2}$ to 4 μ, bearing at their tips the pale olivaceous, obovate or elliptical, uniseptate conidia, 15 to 20 x 9 to 11 μ, sometimes constricted at the septum.

Hadotrichum Blasdalei, Sacc., in litt.

On leaves of *Vicia gigantea*, Mill Valley, Calif., May, 1893, W. C. Blasdale, No. 126.

Forming small ($\frac{1}{2}$ to 1 mm.), gregarious, erumpent, superficial, dirty olive-colored, thin, appressed patches, mostly on the lower face of the leaf, which here becomes pale yellowish. Conidia elliptic-ovoid, mostly subapiculate at base, 12 to 26 (mostly 15 to 20) x 10 to 14 μ, variously guttulate, olive-brown, continuous. Basidia fasciculate, obclavate, continuous, concolorous, 22 to 26 x 7 to 9, μ, bearing a single conidium at the apex.

Heterosporium tuberculans, E. & E.

On dead herbaceous stems, Fort Collins, Colo., June, 1893, C. F. Baker, No. 155.

Hyphæ subfasciculate, erect, sparingly septate, olive-brown, 100 to 150 x 5 to 6 μ, simple, of about the same diameter throughout, subnodulose or subgeniculate above, subundulate,

arising from a subhemispherical tubercule formed from the substance of the stem and 1 to 2 mm. diam. Conidia elliptical, oblong or ovate, olive-brown, 1 to 3-septate, minutely granular-roughened, 15 to 30 x 8 to 12 μ terminal and lateral.

Uromyces Coloradensis, E. & E.

On *Astragalus* or *Spiesia,* Fort Collins, Colo., June, 1893, C. F. Baker, No. 118.

Æcidium (Æc. porosum, Ph.?) evenly and thickly scattered over the lower face of the leaf which is somewhat swollen, erumpent, hemispherical at first, then open, $\frac{1}{2}$ to $\frac{3}{4}$ mm. diam., margin spreading, lacerate-toothed, æcidiospores globose, ovate and angular 15 to 22 x 12 to 15 μ, deep orange yellow. Teleutospores, ovate, obovate, globose, angular or otherwise irregular, light chestnut color, smooth, epispore thickened at the apex and generally with a distinct papilla, forming minute ($\frac{1}{2}$ to $\frac{3}{4}$ μ), amphigenous, irregularly scattered sori nearly black while covered by the epidermis, chestnut color when exposed and bare. Pedicels fragile, hyaline, 30 to 40 μ long.

U. Astragali (Opiz.) has smaller, more regularly shaped spores and no *Æcidium.*

Uromyces Gnaphalii, E. & E.

On leaves of *Gnaphalium* sp., Fort Collins, Colo., Nov. 29, 1892, C. F. Baker, No. 71.

III. Sori scattered, hypophyllous, 1 mm. diam., naked, dark chestnut brown. Teleutospores globose or elliptical, smooth, strongly thickened at the apex, but not distinctly papillate, 22 to 30 x 19 to 22 μ, with granular contents. Pedicels hyaline, cylindrical, 80 to 100 x 4 to 5 μ.

Puccinia heterantha, E. & E.

On *Œnothera heterantha,* Basin, Montana, July, 1892, Rev. F. D. Kelsey; Sheridan, Montana, Mrs. L. A. Fitch; on *Oe. ovata,* Berkeley, Calif., March, 1892, W. C. Blasdale.

I. Æcidia abundant, scattered over the entire leaf, epiphyllous, though sometimes hypophyllous, short, 2 to 3 mm.

in diameter; border, whitish, spreading, irregularly torn; spores subglobose, smooth orange in color and 18 μ in diameter. Spermogonia abundant.

II and III. Hypophyllous. Uredospore sori scattered, round, $\frac{1}{2}$ to 1 mm. diam., bordered by the ruptured epidermis, cinnamon color. Uredospores, subglobose, 16 to 22 μ in the longer diameter, faintly echinulate. Teleutospore sori same as those of the uredospores, only darker. Teleutospores ovate or oblong-elliptical, smooth, slightly constricted, rounded at both ends, 24 to 32 x 16 to 22 μ, epispore moderately thickened at the apex and mostly with a distinct papilla.

Uredo Californica, E. & E.

On leaves of *Vicia gigantea*, Mill Valley, Calif., May 25, 1893, W. C. Blasdale, No. 126.

Sori mostly hypophyllous, small ($\frac{1}{2}$ mm. or less), soon naked and often subconfluent, olivaceous, not many spots, but the leaf is a little paler (pale yellow above) in the parts occupied by the fungus. Uredospores globose or elliptical, nearly hyaline, faintly aculeolate, 15 to 20 x 10 to 14 μ.

In the effused state this resembles some hyphomycetous fungus. Differs from the Uredo of *Uromyces Fabæ* (Pers.), in its smaller, olivaceous sori and nearly hyaline spores.

Æcidium Gauræ, E. & E.

On leaves of *Gaura parviflora*, Fort Collins, Colo., June, 1893, C. F. Baker, No. 127.

Spots amphigenous, suborbicular, 3 to 8 mm. diam., reddish-purple above, becoming yellow with a reddish-purple border, border paler below. Spermogonia honey-color or yellow, prominent, occupying the spots on the upper surface; Æcidia hypophyllous, innate-erumpent, crowded, small ($\frac{1}{4}$ to $\frac{1}{3}$ mm.), soon open with the spreading margin coarsely lacerate-toothed; æcidiospores globose, smooth, 14 to 17 μ diam., orange-yellow.

This is entirely different from *Æcid. gaurinum*, Pk., which has scattered æcidia.

Æcidium Columbiense, E. & E.

On leaves of *Hieracium* sp., British Columbia, July, 1893, Dr. J. Macoun.

Hypophyllous, evenly scattered, cups shallow, open, 300 to 400 μ diam., margin dentate-toothed. Spermogonia scattered among the æcidia. Spores orange-yellow, globose, elliptical or subangular, smooth, 15 to 20 μ in the longer diameter.

Differs from *Æc. Hieracii* in its scattered mode of growth.

Æcidium solidaginicolum, E. & E.

On leaves of *Solidago*, Fort Collins, Colo., June, 1893, C. F. Baker, No. 135.

Spots yellow, 3 to 5 mm. diam. Æcidia amphigenous, but mostly hypophyllous, innate, hemispherical, ½ to ¾ mm. diam., pierced at the apex with a small, round opening with a toothed margin, but never open as usual in most Æcidia. Spores globose, orange colored, 20 to 24 μ diam.

The structure of the cups is about the same as in *Æc. hemisphericum*, Pk. This is quite different from *Æc. Solidiganis*, Schu.

CORRECTIONS IN NOMENCLATURE.—III.

By Edward L. Greene.

The name *Glossopetalon* which the late Dr. A. Gray assigned to a western genus being only a homonym, I propose that these shrubs shall bear the generic name

FORSELLESIA. - nomen superfluum.

Glossopetalon, A. Gray, Pl. Wright. ii. 29 (1853), not of Schreber, Gen. i. 205 (1789).

The new name is commemorative of James Henry Forselles, a swedish mining engineer and botanical writer of a half century ago. The species known are the following:

1. **F. spinescens** (Gray l. c. *sub.* Glossopetalo).

2. **F. Nevadensis** (Gray, Proc. Am. Acad. xi. 73 (1875), *sub* Glossopetalo).

Glossopetalum, Schreb. = Gouania, Aubl. 1775.

COLINA.

C. Caffrorum (=*Polypodium Caffrorum*, L.,=*Mohria thurifragra*, Swartz). The name commemorates the French Professor Colin.

Delphinium Blochmanæ. *D. ornatum*, Greene, Flora Franciscana, 304. There is an older and European *D. ornatum*, and our plant may well take the name of the lady who last spring rediscovered it, confirming its specific rank.

Tradescantia pinetorum. *T. tuberosa*, Greene. Bot. Gaz. vi. 185, not Roxb. Corom. ii. 5, t. 108.

Eunanus Congdoni. *Mimulus Congdoni*, Rob. Proc. Am. Acad. xxvi. 175.

NEW CALIFORNIAN UREDINEÆ.

By P. Dietel.

By the kindness of Mr. Holway I have received numerous Uredineæ from California, which in part are new or have not been sufficiently distinguished hitherto from similar species. The specimens have been collected by Mr. W. C. Blasdale, Berkeley, Prof. A. J. McClatchie, Pasadena, and Mr. E. W. D. Holway, Decorah (Iowa). Some of these new species have already been described in Hedwigia (1893, pp. 29, 30), and in the Botanical Gazette (1893, No. 7). In the following we give descriptions of a further series of them.

Uredo coleosporioides, D. & H. Sori on the stems and under surfaces of the leaves, orange-red. Spores ovoid to oblong, echinulate, with colorless membranes, 22—30 x 15—25 μ.

On *Castilleia foliolosa.* Berkeley, Cal., June, 1893, leg. Blasdale. In its general appearance this species resembles the uredoform of a *Coleosporium*, but the spores are not formed, as is the case in this genus, in chains.

Uredo Castilleiæ, D. & H. Sori dark brown, almost con-

cealed by the pubescence of the host plant, principally hypophyllous. Spores broadly oval or spherical, chestnut brown, finely echinulate, 24—30 μ in diam.

On *Castilleia foliolosa.* Berkeley, Cal., June, 1893, leg. Blasdale.

Uredo sphacelicola, D. & H. Spots yellowish or absent. Sori amphigenous on the leaves, roundish, ca. 1 mm. in diameter, pulverulent, at first covered by the ruptured epidermis, pulvous. Spores globose or nearly so, brown, densely echinulate, measuring 32—40 μ in diam.

On *Sphacele calycina.* Mt. Tamalpais, Cal., May, 1893, leg. Blasdale.

Uromyces Chlorogali, D. & H. Amphigenous. Æcidia isolated, minute, opening by an oblong fissure of the pseudoperidium; peridial cells loosely coherent; æcidiospores globose or broadly ovate, finely verrucose, with a colorless membrane, 31—40 μ in diam.—Teleutospore layers irregularly scattered, first covered by the epidermis; soon naked, roundish or irregular, dark brown. Teleutospores globose, ovate or irregular, thin walled, not thickened at the apex, smooth, brown, 30—40 x 25—35 μ. Pedicels ca. 30 μ, deciduous.

On *Chlorogalum pomeridianum.* Berkeley, Cal., May, 1893, leg. Blasdale.

Puccinia Blasdalei, D. & H. Æcidia loosely arranged into roundish groups. Peridia opening with longitudinal fissures. Æcidiospores orange-yellow, finely verrucose, ovoid or polygonal, 24—31 x 18—14.—Uredospore pustules oblong, sometimes confluent, surrounded by the epidermis; uredospores broadly ovate or subglobose, membranes echinulate, nearly colorless, with orange-red protoplasmatic contents, 27—32 x 22—30 μ.—Teleutospores: sori black, confluent, covered by the epidermis; spores oblong or clavate, very irregular, mostly truncate or pointed above, rounded or attenuated below, slightly constricted at the septum, brown, apical thickening moderate; 36—60 x 18—27 μ. Pedicels

about half the length of the spores. Amongst the bicellular spores occur unicellular ones (mesospores). The teleutospores are enveloped by dark chestnut-brown paraphyses.

On the leaves and stalks of *Allium serratum*. Near Antioch, Cal., May, 1893, leg. Blasdale.—The uredosporic stage seems to develop only to a small extent.

Puccinia procera, D. & H. Uredosori amphigenous; principally epiphyllous, oblong or linear, enveloped by the ruptured epidermis, ochraceous. Uredospores ovoid to spherical, finely echinulate, brownish, 32—45x30—38μ. Teleutosori hypophyllous, linear, disposed into parallel lines, covered by the unbroken epidermis, blackish, surrounded by a dense row of brown paraphyses. Teleutospores very different in form and size, oblong to linear, slightly constriced at septum, usually narrowed below, lower cell often stalk-like elongated, vertex mostly truncate and little thickened, smooth, clear brown, 45—100 x 18—23 μ. Pedicels short, brownish.

On *Elymus condensatus*. Pasadena, Cal., Aug., 1893, leg. McClatchie.—From *Puccinia Rubigo-vera* (DC.), Wint., which is said to occur on *Elymus condensatus; P. procera* differs by the dimensions of the teleutospores as well as of the uredospores.

Puccinia Cryptanthes, D. & H. Sori scattered on the stems and the lower side of the leaves, oblong, minute, (0, 1—3 mm.), sometimes confluent. Uredospores broadly oval or globose, 24—28 x 20—24 μ, rich brown echinulate. Teleutospore layers black, pulvinate. Spores irregular, mostly oblong, commonly rounded at the base, upper cell pointed or truncate, often obliquely, sometimes rounded, central constriction little, apical thickening 5—10 μ, smooth, brown, 34—50 x 19—30 μ. Pedicels not firm, surpassing somewhat the length of the spores. Single-celled teleutospores rather numerous.

On *Cryptanthe Torreyana*. Camp Badger, Cal., July, 1892, leg. Holway.

Puccinia Eulobi, D. & H. Uredospores: sori scattered,

erumpent, oval, 1—2 mm., brown. Spores ovoid or spherical, 24—32 x 18—24 μ, brownish, very minutely echinulate.—Teleutospores: sori long, covered by the lead colored epidermis, afterwards naked, pulvinate, black. Spores oval or fusiform, base rounded, apex conical or rounded, sometimes pointed, somewhat constricted in the middle, 43—66 x 18—24 μ. Epispore smooth, yellowish-brown to chestnut brown, 6—13 μ thick at the apex. Pedicels firm, brownish, about twice the length of the spores.

On all green parts of *Eulobus Californicus*. Pasadena, Cal., leg. McClatchie (No. 295).

Puccinia conferta, D. & H. Hypophyllous producing yellow patches on the leaves of the nourishing plant. Sori minute. 0.3—0.5 mm. in diameter, pulvinate, black, densely crowded into large groups or covering nearly the whole leaf blade. Teleutospores smooth, chestnut brown, clavate, constricted in the middle, apex conical or rounded, much thickened, lower cell mostly attenuated, cuneiform, 47—75 x 24—30 μ. Pedicels firm, about as long as the spores.

On *Artemisia sp.* Kings River Cañon, Cal., July, 1892, leg. Holway. Very distinct from *P. Tanaceti*, DC., occurring on numerous species of *Artemisia.*

Puccinia Lagophyllæ, D. & H. Spots yellowish or none Sori of the uredo stage amphigenous, scattered, minute, brown. Uredospores ovoid or subglobose, brown, finely echinulate, with a thick epispore, 27—31 x 25—29 μ. Teleutospore layers black, circular or oblong, 1—2 mm. in diam., often circinating and confluent. Teleutospores ovoid or elliptical, rounded on both ends or attenuated below, slightly constricted at the septum, smooth, chestnut brown, lower cell usually lighter, apex thickened 6—9 μ, 38—55 x 22—32 μ. Pedicels colorless, deciduous, longer than the spores.

On *Lagophylla congesta.* Berkeley, Cal., in the University Bot. Garden, July, 1893, leg. Blasdale.—We are not able to indentify this with any species described on Compositæ.

Puccinia Baccharidis, D. & H. Amphigenous. Uredo-

sori numerous, scattered, minute, ochraceous, pulverulent. Uredospores ovoid or elliptical with a pale brownish, echinulate membrane perforated by numerous germ-pores, which are distributed over the whole surface, 34—44 x 21—31 μ. Teleutosori minute, pulvinate, pale. Teleutospores clavate or oblong, rounded at the little thickened apex, attenuated or rounded below, constricted at the septum, pale brownish, smooth, 56—74 x 23—32 μ. Pedicels firm, mostly longer than the spores, inflated, often very considerably. The teleutospores germinate directly after their maturation without any period of rest.

On *Baccharis viminea*. Pasadena, Cal., Aug., 1893, leg. McClatchie (No. 359).—This fungus has most resemblance to another Californian species on *Baccharis pilularis*, viz.: *Puccinia evadens*, Hark. In the "Provisional Host-Index of the Fungi of the United States" of Farlow and Seymour *Puccinia evadens* is also noted as occurring on *Baccharis viminea*. But there can be no doubt as regards the specific difference of the forms. The teleutospores of *P. evadens*, have a broad cap-like apical thickening of ca. 8μ, whereas in *P. Baccharidis* the thickened part of the apex is minute and only 3—4 μ thick. Another difference consists in the shape of the spore stalks, which in *P. evadens* are not inflated. I have not been able to examine whether the uredo stage exhibits any difference.

Puccinia mellifera, D. & H. Æcidia hypophyllous on yellow or brown spots, isolated or composed into little groups, cinnamon colored, dusty. Pseudoperidia elongated, deeply slit, very perishable; peridial cells cylindrical, somewhat rough or nearly smooth, easily separable from one another. Æcidiospores ovoid or subglobose, finely verrucose, brownish, with numerous germ-pores, 29—40 x 24—29 μ. Teleutospore layers mostly epiphyllous, roundish, ca. 1 mm. in diameter, naked, black-brown. Teleutospores elliptical, rounded on both ends, slightly constricted in the middle, little thickened, if at all, at the apex, smooth, chestnut brown, 40—50 x 28—35 μ. Pedicels of moderate strength, measuring up to 80 μ.

On *Salvia mellifera.* Pasadena, Cal., leg. McClatchie (No. 297). The same fungus has been sent by Dr. Harkness to the late Dr. G. Winter apparently on the same host plant. It has been confounded hitherto with *Puccinia nigrescens*, Pk., a species with smaller teleutospores, which are verrucose and not smooth, as principally described.

ON CERTAIN LEAF-HAIR STRUCTURES.

By Walter C. Blasdale.

The structures which I shall consider in this paper occur in great abundance on the fronds or leaves of certain ferns of the genera *Gymnogramme*, *Notholæna*, and *Cheilanthes* and on at least five species of the genus *Primula.* Though normally occurring on the lower surface only, they may appear on the upper, and in all cases are distributed quite uniformly; that is, without reference to the sori veinlets or other organs.

They may be designated as simple capitate hairs, and the secretions to which they give rise, and which distinguish them from all similar structures, consist of certain mealy products that vary both in color and consistency. Some are crystalline, some are waxy or even oily, while others are merely granular. In color these secretions present various shades of yellow, red or orange but may be pure white.

According to Hooker's Synopsis Filicum, there are in the genus *Gymnogramme* seven species that bear these glands; and, chiefly on this account, they have been set apart as the *Ceropteris* division, though certain botanists have considered the group a distinct genus in itself. The species are as follows:

G. triangularis, Kaulf. A widely distributed species appearing on the Western Coast of America and reported to range from Vancouver Island to Peru.

G. trifoliata, Desv. A native of Cuba, Brazil and Peru. The fertile fronds bear an abundance of white or yellow powder.